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| 10/578,873 | 12/15/2006 | Giuseppe Conti | 291050US0X PCT | 8677 |
| 22850 | 7590 | 11/19/2010 | EXAMINER | |
| OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | QIAN, YUN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1732 | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/578,873 | Applicant(s) CONTI ET AL. | |
| | Examiner YUN QIAN | Art Unit 1732 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 1 and 3-13 remain for examination. Claims 1 and 5 are amended. Claim 2 has been canceled. Claims 14-52 have been withdrawn to non-elected inventions.

Previous Grounds of Rejection

In the light of the amendment, the abstract objection has been withdrawn as it is shortened in less than 150 words.

In the light of the amendments, the rejection under 35 U.S.C. 102(b) as being anticipated by Garoff et al. with respect to claims 1, 7-10 and 13 (US 6,200,923) has been withdrawn, however a new ground of rejection is made as follows.

In the light of the amendments, the rejection under 35 U.S.C. 103(a) as being unpatentable over Garoff et al. and in view of Luciani et al (US 5,278,117) with respect to claims 2-6 and 11-12 has been amended as claim 1 has been amended.

New Ground(s) Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1 and 3-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Garoff et al. (US 6,200,923), and further in view of Luciani et al (US 5,278,117).

Regarding claims 1 and 6, Garoff et al discloses polymerization catalyst $(\text{MgX}^3_2)_x\text{TiX}^4_4(\text{R}(\text{COOR}')_n)_y$ containing magnesium (i.e. $\text{MgCl}_2 \cdot 3\text{EtOH}$, applicant's magnesium, chloride ion and organo-oxygenated protic compound D_p), titanium tetrahalide (i.e. TiCl_4), and ester (i.e. di-undecylphthalate, diethyl phthalate and ethyl octyl phthalate and phthalic acid ester, applicant's neutral electron-donor aprotic compound D).

Garoff et al. teaches a molar ratio of $\text{Mg}/\text{Ti}=1.55$, $\text{EtOH}/\text{D}=0.3$, $\text{D}/\text{Ti}=1.0$, when $\text{X}^3 = \text{X}^4 = \text{Cl}$, $x=3$, $\text{Cl}/\text{Ti}=10$ (Table 3 example 3, col.7, lines 31-41, claims 3-5).

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Although Garoff et al. does not specifically teach the inorganic solid support material as per applicant's claim 1, Luciani et al. teaches a supported catalyst for ethylene polymerization containing a granular solid support with titanium alcoholate (i.e. $\text{Ti}(\text{OBu})_4$) and magnesium chloride in hydrocarbon. The molar ratio of Ti/Mg is 1/1, and the formula $\text{Ti}(\text{OR})_4 \cdot (1-6)\text{MgCl}_2$ indicates the molar ratio of Cl/Ti= 2-12 (abstract, claims 1-8), the residual ester (i.e. ethyl acetate) quantity is between 0 and 20%wt, which is encompassed by the instant claim.

Silica (40-85%wt) taught by Luciani et al. has a mean diameter of 40 μm , BET 307 m^2/g , total porosity 92.6%, and mean pore radius 132 \AA (col. 6, lines 1-15, claims 1-8)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Garoff et al. and Luciani et al. to obtain the invention as specified in the claims 1 and 6, motivated by the fact that the catalyst system is highly active and can produce ethylene polymers with a molecular weight distribution varying from narrow to wide, because the magnesium chloride is deposited in highly active amorphous form on a porous support (col. 1, line 19-col. 2, line 2).

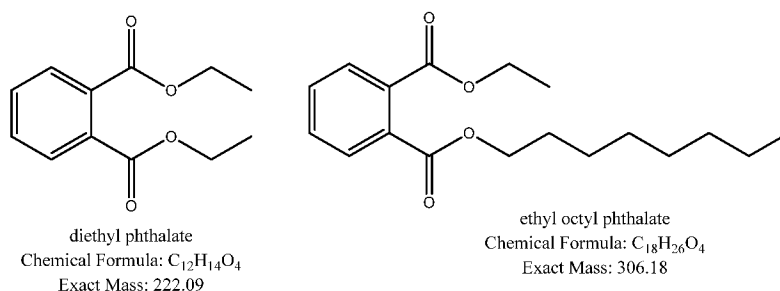
Regarding claim 3-5, as discussed above, the inert granular solid taught by Luciani et al. is silica (40-85%wt), which has a mean diameter of 40 μm , BET 307 m^2/g , total porosity 92.6%, and mean pore radius 132 \AA (col. 6, lines 1-15, claims 1-8). It meets the limitations of the instant claims.

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Regarding claim 7, as discussed above, the molar ratio of ethanol to diundecylphthalate is 0.3, which is encompassed by the instant claim.

Regarding claims 8-9, ethanol disclosed by Garoff et al. corresponds to applicant's organo-oxygenated protic compound Dp, wherein $R=CH_3$, $Am=CH_2$.

Regarding claim 10, diethyl phthalate and ethyl octyl phthalate taught by Garoff et al. corresponds to applicant's aprotic electron-donor compound D. It is a non-metallic organic ester compound having 12 or 18 carbon atoms as shown below (Table 7, col. 13-14):



Regarding claims 11-12, Luciani et al. teaches electron donor compound such as ethyl acetate as the instant claims (claim 8).

Regarding claim 13, the wt% of titanium taught by Garoff et al. is from 5.3% to 7.4%, which is encompassed by the instant claim (Table, 7, col.13-14).

Response to Arguments

With regards to the previous Grounds of Rejection

Applicant's arguments filed on September 29, 2010 have been considered but are not persuasive. The examiner would like to take this opportunity to address the Applicant's arguments.

Applicants argue that the catalytic composition of Garoff et al. does not comprise recited protic compound D_p as the instant application. A liquid solution catalyst of Garoff et al. cannot be compared to the “solid component of catalyst” of the instant application (Remarks, page 16). The precipitate of the complex prepared according to Garoff et al., EtOH is no longer present, neither in the solution, nor in the complex (Remarks, page 17). Unlike Garoff et al., the solid component according to the instant application comprises a D_p protic compound in its composition (Remarks, page 18).

The Examiner respectfully submits that the catalyst composition of Garoff et al. is in a solidified form (Example 3, title of Table 3, col.7, line 32).

Applicants are right that some of ethanol in the catalyst taught by Garoff et al. may be present as ethoxide group. Garoff et al. calculate ethoxide as ethanol EtOH.

However, according to the definition of the “oxygenated protic compound D_p ” by applicants, the D_p can also represent a mixture of compounds different from the compound having formula (II) $(R-(A)_m-OH)$ introduced in step (d), due to exchange with said carboxylates or alcoholates. In any case, however, the beneficial effects due to the presence of said organo-oxygenated protic compound as a whole are not modified (PGPUB of the instant application, [0065]).

In other words, the D_p (i.e. 1-butanol) present in the final product of the instant application is also a mixture alkoxide and alcohol as Garoff (i.e. butoxide and butanol). For the sake of argument, how do the applicants determine the amount of the butanol in the mixture of butanol and butoxide?

According to the explanation by applicants, when the complex is analyzed, it is dissolved (as common practice) in the presence of an acid, to identify the elements and the ethoxide group is determined as "EtOH" (Remarks, page 17). Therefore, it is further support that the amount of D_p as presented in the Examples 1-6 in the instant application is calculated butoxide as butanol. It is the same as teachings of Garoff et al.

In response to applicants arguments that the alcohol of Garoff et al is introduced prior to the reaction, which is different from the method of the instant application, wherein the D_p protic compound is added to a solid precursor already pre-formed (Remarks, page 17), the Examiner respectfully submits the combined references (Garoff et al. and Luciani et al.) as a whole teach the claimed invention. The molar ratios of each component in the catalyst taught by Garoff et al. (i.e. Mg/Ti, D_p/D, and D/Ti) is encompassed by the instant application as discussed above.

It is considered while the product of the reference is made by a different process, the product made and disclosed is the same as being claimed. Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious different between the claimed product and the prior art product (In re Marosi, 710 F.2d 798, 802,218 USPQ 289, 292 (Fed. Cir.1983), MPEP 2113).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features, upon which applicant relies are not recited in the rejected claim(s) (i.e., an exchange significantly and surprisingly deforms the structure of the solid, improvement in production and process, properties of polymer, etc.) (Remarks, pages 18-19). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant's arguments against the reference of Luciani et al. are not found persuasive.

Because, note that while Garoff et al. do not disclose all the features of the present claimed invention, Luciani et al. is used as teaching reference, and therefore, it is not necessary for this reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely a granular solid support catalyst containing titanium alcoholate and magnesium chloride for ethylene polymerization, and in combination with the references of Garoff et al, discloses the presently claimed invention as discussed above. Therefore, the subject matter of the instant application as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.

Since both of Garoff et al. and Luciani et al. teach polymerization catalysts, one would have a reasonable expectation of success.

As such the rejection is proper and stands.

For all the above reasons, the restriction requirement is still deemed proper and is therefore is made FINAL.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUN QIAN whose telephone number is (571)270-5834. The examiner can normally be reached on Monday-Thursday, 10:00am -4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/YUN QIAN/
Examiner, Art Unit 1732

November 15, 2010

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1732